



# FlashPoints



Hazardous Materials Transportation Safety Newsletter

Issue #11

Summer 2002



## Upcoming TSI Classes in Oklahoma City:

**Transportation of Hazmat (49 CFR)****-Basic** Sep 16-20, Nov 4-8, Dec 2-6,  
Jan 27-31**-Recurrent (Refresher)** Oct 22-24,  
Feb 11-13**Air Transportation of Hazmat (ICAO/  
IATA)** Sep 17-19, Dec 10-12**IMDG Code**  
Feb 4-6**Instructor Training**  
Sep 4-6, Nov 19-21, Feb 25-27**Cargo Tanks**  
Aug 19-23**Performance-Oriented  
Packaging** Dec 3-5**Radioactive Materials**  
Feb 4-6**Infectious Substances**  
Jul 24-25, Oct 23-24, Feb 12-13**Cylinders**  
Sep 10-12, Feb 25-27**Explosives**  
Sep 4-6**Hazardous Wastes & Substances**  
Oct 29-31**Customized and on-site  
training also available**

For more information, or to receive a training brochure, please contact the TSI Hazardous Materials Division. Contact information is below.

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## Q & A on the RQ

### ***Do you understand the US DOT rules for Hazardous Substances and Reportable Quantities?***

Hazardous substances and reportable quantities (RQ) are hazmat transportation terms that are unique to the United States. These terms are more closely associated with the US Environmental Protection Agency (EPA) but are also incorporated into the hazardous materials regulations of the US Department of Transportation (DOT). Importers and exporters outside the US are often confused by the DOT "RQ" rules. This confusion is also fairly common for domestic shippers and carriers. So, let's try to answer some of the most common questions on this subject.

#### **What is a hazardous substance?**

"Hazardous Substance" is a term the DOT adopted from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which requires the DOT to regulate the EPA's hazardous substances. These hazardous substances are materials that can be extremely harmful to the environment when released. "Hazardous substance" is not synonymous with the DOT term "hazardous material" or the international term "dangerous goods."

According to the DOT's hazardous materials regulations in 49 CFR, a material is only considered to be a hazardous substance if it is listed in Appendix A of section 172.101 and is transported in a package that contains a *reportable quantity* of that substance. DOT hazardous substances do not include petroleum, crude oil and its fractions, natural gas, natural gas liquids, liquefied natural gas, or synthetic gases when used for fuel.

Not all hazardous materials are hazardous substances, but once a material qualifies as a hazardous substance under DOT rules then it is automatically a hazardous material (dangerous good) when transported.

#### **What is a reportable quantity?**

A reportable quantity is the *quantity* of a hazardous substance that has to be released to the environment (spilled) before the EPA requires the release to be *reported* to the National Response Center.

#### **How do you use the DOT's list of hazardous substances?**

49 CFR, section 172.101, Appen-

(RQ, continued on page 2)

(RQ, continued from page 1)

dix A, appears right after the Hazardous Materials Table. Appendix A is further broken down into two tables: Table 1 for regular hazardous substances and Table 2 for radionuclides. We'll concentrate on Table 1 here but the basics for using both tables are the same.

Table 1 has two columns (see example below). The first column lists, alphabetically, the names of hazardous substances as set by the EPA. Some of these names may also be proper shipping names but many of them are chemical names or hazardous waste codes that are not indicated by specific proper shipping names. Remember, this table actually comes from the EPA regulations so the chemical names do not always appear as they would in the Hazardous Materials Table of 49 CFR or the dangerous goods lists of international regulations.

The second column shows the reportable quantity in pounds and then kilograms for each substance. For DOT purposes, you are not shipping a hazardous substance unless you meet or exceed the reportable quantity in ONE package (not inner receptacle, not overpack, not total consignment, —just the package).

49 CFR, 172.101, Appendix A, Table 1 (excerpt)

Hazardous substance	Reportable quantity (RQ) pounds (kilograms)
Benzene.....	10 (.454)
Benzo[k]fluoranthene.....	5000 (2270)

### How do you assign a proper shipping name to a hazardous material that is also a hazardous substance?

As mentioned before, some chemical names from Appendix A are also proper shipping names so you can just stick with that shipping name. "Benzene" is a good example of this. Other times, you will have to choose the most appropriate generic name based on the hazard class and other properties of the material. In some cases you may have a reportable quantity of a substance listed in Appendix A but the substance may not meet the normal criteria of a DOT hazard class. In these cases the material will be assigned to hazard class 9. The proper shipping name will then usually be "Environmentally hazardous

substance, liquid, n.o.s." or "Environmentally hazardous substance, solid, n.o.s.". The specific names of the hazardous substance would then be added in parentheses. Example: If you have a package containing 100 pounds of a liquid compound that is 10% Benzene, you have ten pounds of Benzene in the mixture and have met the RQ for Benzene —and therefore have a hazardous substance. But the proper shipping name "Benzene" is a hazard class 3 proper shipping name and if that compound does not meet the criteria for hazard class 3, flammable liquids, you cannot use the proper shipping name "Benzene" nor can you use "Flammable liquid, n.o.s.". If you don't meet any other hazard class then you may describe this material as "Environmentally hazardous substance, liquid, n.o.s. (contains benzene)".

### What are the shipper's responsibilities when the RQ is met in one package?

The letters "RQ" must appear before or after the basic description on the shipping paper and must be marked in association with the proper shipping name on the outside of *non-bulk* packages. Also, if the proper shipping name does not contain the name of the hazardous substance (e.g., a generic shipping name) then the name(s) of the hazardous substance(s) must be entered in parentheses.

### What are the carrier's responsibilities?

If a hazardous substance spills during transportation then it is most likely going to be in the possession of the carrier. Under 40 CFR, §302.6, the carrier will be responsible for calling the National Response Center (800-424-8802 / 202-267-2675) and reporting the spill. This requirement could also apply to the shipper or other facility operator if a release occurs before or after the material is transported. *See the definition of "release" and "facility operator" in 40 CFR, §302.4.*

### The definition of "hazardous substance" in 49 CFR §171.8 contains a chart. How is that used?

This chart is used when you have a mixture or solution that contains a reportable quantity of a material listed in Appendix A of 172.101. This chart is only used after you have established that you have a reportable quantity—it is not used to determine if

(RQ, continued on page 4)

## Addition of a liner doesn't necessarily constitute a "different packaging"

Generally, when an approved UN packaging undergoes some type of design change—such as a change in the materials used in its construction—this is considered to be a "different packaging" by the DOT (see 49 CFR 178.601(c)(4)). A different packaging may not rely on the test results of the previous UN package tests and must be retested in its new configuration. But what if the only change is that a plastic bag is added as a liner to a previously tested packaging? Would this packaging have to be retested since a new packaging material has been introduced? Not necessarily. The DOT discussed this issue in a recent clarification letter (Ref. No. 02-0026). Here is an excerpt from that letter:



### A DOT Clarification

"...you inquire whether the addition of a leak-proof liner to a previously tested fiberboard box design would require design qualification testing as a different design type under §178.601(c)(4).

Provided the liner does not compromise the integrity of the original tested design type (e.g., packaging assembly, closure method), the addition of a liner or similar form of containment would not be considered a different packaging and, therefore, would not require design qualification testing as a new design type."

This clarification is of particular interest to those who ship or carry liquids by air. Both 49 CFR and the ICAO Technical Instructions require that a leak-proof liner, plastic bag, or suitable means of containment be used when absorbent material is *required* and the outer packaging itself is not leak-proof. Furthermore, in 2002, IATA modified its airline industry regulations to apply this requirement to combination packages of liquids even when absorbent material is not required. Though not legally binding, this extra IATA requirement is

the policy of most airlines that carry hazardous materials.

Based on this clarification letter, shippers may add a liner, plastic bag or other suitable intermediate packaging to a previously-approved combination package—provided this does not compromise the original tested design type in any way.

You can view this and other DOT clarification letters on the internet at: <http://hazmat.dot.gov> under the "Rules & Regulations" section. ♦

## Hazmat Rulemaking Update

**New Rule: Start holding on to copies of hazmat shipping papers for 375 days!**

The following rulemakings or proposed rulemakings may be viewed in their entirety at: <http://hazmat.dot.gov/rulemake.htm>

### Final Rules

[HM-207B](#) Retention of Shipping Papers; Effective Date: August 12, 2002

[RSPA-98-3974](#) (no HM #) Revised and Clarified Hazardous Materials Safety Rulemaking and Program Procedures; Effective Date: July 25, 2002

### Notices & Advanced Notices of Proposed Rulemakings

[HM-232A](#) (also FMCSA-02-11650) Security Requirements for Motor Carriers Transporting Hazardous Materials

[HM-232B](#) Revision to Periodic Tire Check Requirement for Motor Carriers Transporting Hazardous Materials

[HM-232](#) Security Requirements for Offerors and Transporters of Hazardous Materials

[HM-228](#) Hazardous Materials: Revision of Requirements for Carriage by Aircraft; Extension of Comment Period

[HM-230](#) Compatibility With the Regulations of the International Atomic Energy Agency

Answer: C. This is the only shipment that contains 10 pounds of benzene per package.

(RQ, continued from page 2)

a package contains a reportable quantity. A material that meets or exceeds the concentrations in this chart *may* be a hazardous substance—the reportable quantity per package must still be met. A material that is below the concentration quantities shown in this chart is excepted from the DOT hazardous substance rules—even when the package contains the reportable quantity. Example: Benzene has an RQ of 10 pounds. According to this chart, in order for a package containing Benzene to qualify as a hazardous substance it would first have to have at least 10 pounds worth of Benzene in it and have a concentration greater than 0.02 percent / 200 part per million of benzene. We often call this the 50,000-pound rule. Because once you meet the RQ, the only way possible for you to be under the concentration limits in this chart is if you have a package that contains more than 50,000 pounds. Example:

**Chart from definition of “Hazardous Substance”, 49 CFR §171.8**

*(Being at or above the concentration level does not automatically make it a hazardous substance to the DOT! The actual quantity of the hazardous substance that is in the mixture must meet the reportable quantity in one package.)*

RQ pounds (kilograms)	Concentration by weight	
	Percent	PPM
5000 (2270) .....	10	100,000
1000 (454) .....	2	20,000
100 (45.4) .....	0.2	2,000
10 (4.54) .....	0.02	200
1 (0.454) .....	0.002	20

A package that contains 10 pounds (the RQ) of Benzene in a mixture would have to contain more than 50,000 pounds of total product before the concentration of Benzene falls below 0.02 percent or 200 parts per million (PPM).

**Does any spill from a package marked “RQ” require a call to the National Response Center?**

No. The EPA requirement to report a hazardous substance release is based on how much spills, not how much is in the package (see 40 CFR, §302.6). For example, if a package contains 200 pounds of a hazardous substance and the reportable quantity (RQ) for that substance is 100 pounds, then the package (non-bulk) and the shipping paper will show “RQ” since the package contains the reportable quantity (and more). But, if only 20 pounds spills from the package, there has not been a release

of the reportable quantity (100 pounds) so no report is required by the EPA. (If spilled during transportation a phone call and written report may be required for other reasons under DOT rules; see 49 CFR, §171.15/16.)

**Is it ever necessary to report the spill of a hazardous substance when “RQ” is not required to be entered on the shipping paper or marked on the package?**

Under EPA regulations—Yes. As stated previously, the EPA wants to know when a certain quantity of a hazardous substance is released to the environment, regardless of the per package quantity. For example, if the reportable quantity for a given hazardous substance is 10 pounds and you have 20 one-pound packages of it, none of the individual packages contains a reportable quantity so you don’t have a “hazardous substance” under DOT regulations. Therefore, “RQ” would not be entered on the shipping paper or marked on the packages. But, if all these packages spilled at the same time during an accident, then the total volume of the spill would exceed the reportable quantity and would have to be reported per EPA regulations—even though this didn’t qualify as a hazardous substance shipment under DOT regulations. In short, the EPA bases its hazardous substance rules on release quantities and the DOT bases its hazardous substance rules on the individual package quantities. (See also 49 CFR, §171.15/16)

For more information on the EPA’s requirements for reporting releases of hazardous substances (and related exceptions) see 40 CFR, Part 302. ♦

## Quiz

**Think you understand RQ now? Then answer this question:**

Refer back to the table on page 2. Which of these shipments meets the criteria for a reportable quantity (RQ) under DOT rules? (Answer is on bottom of page 3)

- A. One package containing five 1-pound jars of benzene.
- B. Ten packages each containing 2 pounds of benzene, all overpacked into one wooden crate.
- C. One package containing five 3-pound jars of benzene.
- D. One package containing 100 pounds of a mixture that is 5% benzene.